Complete Summary

GUIDELINE TITLE

Responding to detection of aerosolized Bacillus anthracis by autonomous detection systems in the workplace.

BIBLIOGRAPHIC SOURCE(S)

Meehan PJ, Rosenstein NE, Gillen M, Meyer RF, Kiefer MJ, Deitchman S, Besser RE, Ehrenberg RL, Edwards KM, Martinez KF. Responding to detection of aerosolized Bacillus anthracis by autonomous detection systems in the workplace. MMWR Recomm Rep 2004 Jun 4;53(RR-7):1-12. PubMed

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Exposure to or infection with anthrax (Bacillus anthracis)

GUIDELINE CATEGORY

Management
Prevention

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Internal Medicine
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Clinical Laboratory Personnel
Emergency Medical Technicians/Paramedics
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide recommendations for responding to and detecting aerosolized Bacillus anthracis by autonomous detection systems in the workplace

TARGET POPULATION

- Persons who may be exposed to or infected with anthrax in the workplace
- Persons, including family members, who may be at risk for exposure to anthrax transported out of the workplace

INTERVENTIONS AND PRACTICES CONSIDERED

Detailed plans for responding to a positive autonomous detection system (ADS) signal including:

1. Response and consequence management planning, including the minimum components of a facility response plan
2. Immediate response and evacuation
3. Decontamination of potentially exposed workers to remove spores from clothing and skin and prevent introduction of Bacillus anthracis into the worker's home and conveyances
4. Laboratory confirmation of an ADS signal
5. Steps for evaluating potentially contaminated environments
6. Postexposure prophylaxis and follow-up

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Response and Consequence Management Planning

Every employer who deploys an autonomous detection system (ADS) should develop detailed plans for responding to a positive signal (see Box 1 in the original guideline document). Responding to ADS detection of Bacillus anthracis involves coordinating responses with community partners and should include drills and exercises with these partners. Response planning should involve the following entities:

- Local and state health departments. Because health departments will provide guidance on prophylaxis, laboratory confirmation, and long-term follow-up for employees potentially exposed, they should be made aware of the presence of an ADS and should devise response plans in case of an alert.
- Local first responders. Because local first-response organizations (e.g., police, fire, hazardous materials, and emergency medical services [EMS]) are expected to respond to a suspected terrorist attack, facilities implementing ADSs should involve local first responders in response planning. Employers should also consider contacting the regional office of the U.S. Environmental Protection Agency, who will likely be involved in facility decontamination when necessary.
- Local medical facilities. Employees potentially exposed to B. anthracis spores might seek medical evaluation and treatment at local medical facilities even if they already have undergone decontamination, if appropriate, or have been started on postexposure prophylaxis (PEP). In addition, any potentially exposed employees who believe they are experiencing symptoms related to the exposure or PEP should seek medical evaluation. Therefore, involving one or more local medical facilities in response planning is prudent. Relying on the local health department to provide guidance for these arrangements is also appropriate.
- Law enforcement officials. Terrorism is a federal offense and a worksite with a positive ADS signal is a potential crime scene. Therefore, any employer using an ADS device should inform the regional office of the Federal Bureau of Investigation (FBI) and state and local law enforcement officials about its installation and include them in response planning. Agreeing in advance with FBI and other law enforcement agencies which will be the lead agency during the initial response is essential. Clear command and control procedures are critical when responding to a potential terrorist event.
- Local media representatives. Communicating quickly and effectively with the public is essential. Therefore, employers should consider involving local media representatives as soon as an ADS is installed. Response plans should include a media-planning component, including pre-event development of messages, information packages, and designated spokespersons. Facility managers might prepare a tour and briefing for local media representatives so they understand what an ADS is, what the probable responses will be when a detection occurs, and whom to contact for information. This will increase the likelihood that media will contribute positively to the public health response in the event of a positive ADS signal.

Immediate Response

When a positive ADS signal occurs:

- Work activities should stop immediately.
- Any potentially aerosol-generating equipment should be stopped and secured.

- Heating, ventilation, and air conditioning (HVAC) units serving the production or processing area should be turned off (however, local exhaust ventilation on machines should be left on).
- Personnel should be evacuated to safe locations (see "Recommendations for Evacuation and Personal Decontamination").
- Local and federal law enforcement officials and public health officials should be notified.
- All workers should be accounted for immediately to ensure their evacuation.
- Personal identification and contact information should be gathered.

Management and Decontamination of Workers Potentially Exposed to B. anthracis

Every employer who uses an ADS device is responsible for coordinating in advance personal decontamination procedures through agreements with collaborating partners (e.g., EMS or public health agencies). During pre-event planning, the employer should work with local first responders to ensure decontamination activities will be performed appropriately and in a timely manner.

Persons in a workplace containing an ADS device face three key exposure pathways of concern: 1) aerosolization; 2) direct contamination of skin, outer layers of clothing, and workplace surfaces; and 3) indirect contamination of a vehicle or home by spores transported by clothing or exposed skin. Personal decontamination is intended to minimize the risk of off-site contamination and to prevent cutaneous anthrax; prevention of inhalational anthrax is addressed by PEP.

Potential for Transporting Contamination Off-Site

To prevent or minimize exposure to workers' families, occupational health standards and guidelines typically call for basic hygiene practices (e.g., leaving work clothing and shoes at the job site, washing, and, in certain cases, showering after work). Basic hygiene recommendations also exist for managing potential exposures after a B. anthracis attack against a civilian population. The current consensus statement recommends that "any person coming in direct physical contact with a substance alleged to be containing B. anthracis should thoroughly wash the exposed skin and articles of clothing with soap and water" (Inglesby et al., 2002). Although the risk of cutaneous anthrax from off-site transport appears low, because of gaps in knowledge about this risk, a positive signal from an ADS should elicit a conservative approach to personal decontamination (see Box 2 in the original guideline document).

Recommendations for Evacuation and Personal Decontamination

The primary goal of using an ADS is to prevent inhalational anthrax through early recognition of and response to an exposure situation, including early initiation of PEP. Aerosolization or direct physical contact can result in deposition of spores on the outerwear of employees and subsequent transport off site. Because limited scientific data exist regarding B. anthracis and personal decontamination, these recommendations are based primarily on available information; general industrial-hygiene concepts, principles, and practices; analogy to other contaminants and industrial settings; and a prudent public health approach. These recommendations

might change as information regarding the efficacy of control systems, decontamination methods, and safe work practices becomes available.

Employers, in consultation with first responders and public health departments, should determine exit routes and places of refuge. An outdoor refuge location might be considered but can be problematic because of weather, security, or other concerns. A physically separate building or space inside the potentially contaminated building might also merit consideration, by using the following criteria:

- An alternate indoor location should not share an HVAC system with the production area experiencing the positive signal.
- An alternate indoor location should not share an HVAC system with spaces where unexposed workers are located.
- Unexposed workers should be able to avoid exposure while evacuating the facility and should not pass through the production area experiencing the positive signal.
- Decontamination groups should be able to be segregated to the greatest extent possible to avoid cross-contamination and provide ready access to decontamination as required.

Workers should be categorized into three groups for evacuation and decontamination procedures (see Box 2 in the original guideline document). Group 1 includes those workers who did not enter the production area containing the ADS device during the sampling and testing period (e.g., 1.5 hours) before the positive ADS signal and whose work locations do not share an HVAC system with the production area experiencing the positive signal. Group 2 includes all workers who were present in the production area containing the ADS device during the sampling and testing period before the positive ADS signal or who are located in any space that shares an HVAC system with the production area experiencing the positive signal. Group 3 includes all workers identified in advance as particularly at risk of exposure to a higher concentration of deposited spores as a result of direct physical contact with aerosol-generating equipment. Workers in these groups should be evacuated and decontaminated as follows:

- Group 1. Those workers who were not in the same production area as the ADS and who were not in an area that shares an HVAC system with the affected area do not require decontamination. They should be evacuated safely by pathways and to places of refuge separate from Groups 2 and 3.
- Group 2. Workers in the production area should evacuate immediately. They should take basic precautions to minimize any likelihood of off-site contamination from settled aerosols on the outer layer of worker clothing and on any exposed skin. Removal of outer garments and washing of skin (e.g. face, arms, hands, and legs) are basic steps to preventing inadvertent contamination of worker homes. Approximately 70 to 95% of decontamination can be accomplished by removing outer clothing and shoes (Macintyre et al., 2000; US Army Center for Health Promotion and Preventive Medicine, 2000; Levitin & Siegelson, 1996; Cox, 1994). Washing of exposed skin should also include washing of any exposed jewelry (e.g., rings, bracelets, necklaces, or wristwatches) or glasses. Contamination of inner clothing layers is not likely for these employees. Removed outer clothing should be bagged carefully and left at the facility pending final disposition.

Upon arriving home, workers can shower and wash their hair to further reduce any contamination concerns. Showering with warm soap and water and cleaning systematically from the head down is widely considered the most effective and preferred method for removing hazardous substances from skin (Macintyre et al., 2000; US Army Center for Health Promotion and Preventive Medicine, 2000; Agency for Toxic Substances and Disease Registry, 2001; Hurst, 1997).

- Group 3. As part of coordinated pre-event planning, employers should identify the limited number of employees likely to experience a higher concentration of deposited spores from direct physical contact with equipment that might be associated with B. anthracis aerosolization (e.g., United States Postal Service [USPS] workers operating canceling machines and other mail-processing machines at and immediately downstream or upstream of the ADS device). Where feasible, Group 3 workers should take a separate path to a place of refuge where more extensive decontamination is planned. If any groups must exit by the same route, they should be identified and separated subsequently to minimize cross-contamination.

  Because of the risk that inner clothing or skin might become contaminated when outer clothing is removed, Group 3 workers who performed high-risk tasks during the air-sampling and testing period before the ADS alert could be directed to a separate decontamination area to shower to wash all areas of exposed and unexposed skin or use other nonshower options listed later in this report. Using a separate decontamination space for this group will minimize cross-contamination.

  Only those persons thought to be at risk of substantially higher levels of contamination as a result of direct physical contact with aerosol-generating equipment are candidates for the higher degree of on-site decontamination afforded by showers. If the employer review of job functions does not identify any such possibilities, that fact should be noted in the facility plan, and a supplemental decontamination step is not needed.

Logistical considerations for decontamination include the following:

- Replacement garments and shoes should be stored in an area that would be accessible after evacuation of the production area. This can include having employees bring a change of personal clothing and shoes for storage at appropriate locations, providing a supply of disposable clothing, or a combination of both.
- All clothing and shoes removed after evacuation should be placed in a plastic bag and remain on-site at a pre-designated location pending Laboratory Response Network (LRN) laboratory testing of the ADS sample, after which a decision can be made regarding final disposition.
- Evacuation and wash-up location(s) should be identified in advance.
- Extra decontamination measures for Group 3 should be arranged in advance. A facility might already have showers in a separate building that can be used in the event of an ADS signal. If not, employers should work with emergency responders to address this concern. Where logistical obstacles are severe, first responders and employers can evaluate nonshower options (e.g., misting of clothing or use of high-efficiency particulate air [HEPA] vacuums with

appropriate nozzles designed to clean external clothing surfaces). The parties should consult with National Institute for Occupational Safety and Health (NIOSH) or the Occupational Safety and Health Administration on procedural use of these alternatives.
- Employee training and drills can help allay employee anxiety about responding to a positive signal and improve the quality and efficiency of an actual response.
- Any workers who were on-site during the sampling and testing period but who went home in the period before the positive ADS signal during which aerosolized spores might have been present (which depends on sampling and testing intervals of the particular ADS), should be instructed to place their work clothing in a plastic bag for further disposition, wash exposed skin, and shower, if they would have been categorized as being in Groups 2 or 3.

Other general considerations include the following:

- Emergency-preparedness plans for certain facilities might include installation of local exhaust ventilation at pinch points (i.e., locations in the pathway where a letter or parcel is compressed by equipment) where aerosols can be generated. Using well-designed and maintained ventilation on all relevant processing equipment should capture aerosols as they are created and before workers inhale them or are contaminated by deposition of spores. This usually will reduce or even eliminate the need for personal decontamination of workers in Groups 2 or 3. Planners should consider the potential benefits of keeping HEPA-filtered local exhaust systems operating while general HVAC and other equipment are turned off. Employers can modify their response plans after such ventilation systems have been installed and successfully tested.
- Postal facilities using Biohazard Detection System (BDS) units probably have already eliminated use of compressed air for maintenance cleaning. Nonpostal facility managers should examine maintenance procedures regarding use of compressed air and similar aerosol-generating practices.

Laboratory Evaluation of a Positive ADS Signal

A well-designed ADS has four attributes: 1) a stand-alone and contained configuration; 2) ability to collect a substantial volume of sample; 3) use of a detection technology requiring minimal manual attention; and 4) control procedures to ensure adequate assay performance, including lack of inhibition and reagent stability. Ideally, the assay used in an ADS will have extremely high positive and negative predictive values. Key factors for ensuring accurate and consistent results from ADS devices are development and implementation of maintenance plans with rigid quality-assurance controls. These plans should describe specific policies and procedures for use and maintenance of an ADS. If all these criteria are met, a high level of confidence can be ensured that a positive ADS signal represents a true B. anthracis aerosolization event.

Nevertheless, a positive ADS signal should be confirmed by an LRN laboratory using both polymerase chain reaction (PCR) assay and culture. Policies and procedures for specimen management, including chain of custody, should be arranged in advance. Finally, persons should be identified and trained who can

ensure correct collection and transport of the ADS specimen to the LRN laboratory.

Initial Environmental Evaluation

Environmental sampling in coordination with public health and law enforcement immediately after an ADS signal might be necessary to address both public health and law enforcement goals. The primary law enforcement goal is to assist the criminal investigation by finding the source of contamination. The immediate public health goal is to determine who is in need of PEP (in addition to those who were either in the production area or in a location that shared air-handling with the production area). For example, if a letter causes a positive ADS signal at a processing and distribution center (PDC), it would be important to ascertain which employees, if any, at other facilities through which the letter has passed, should be considered for PEP. Sampling the machine where the ADS is located to confirm a positive ADS signal might also be appropriate. Information about the extent of contamination at the facility is important but is a less-immediate need. Nasal swabs of potentially exposed workers to test for B. anthracis are not recommended.

General guidance, criteria, and recommendations for sampling of B. anthracis-contaminated areas are available elsewhere. Planning for environmental sampling activities before activating an ADS is necessary to ensure that:

- appropriately trained and protected personnel are identified and available to conduct sampling and facility investigation
- response personnel are certified in use of protective equipment (Centers for Disease Control and Prevention [CDC], "Protecting investigators," 2001) and personal decontamination before entering the facility
- appropriate equipment and sampling supplies are available
- pre-event notification and response protocols are established for receipt and rapid processing of samples
- targeted sampling plans are developed, including identifying locations to sample to maximize the likelihood of finding contamination and to expedite results (sampling should use such methods as HEPA sock vacuum methods and wet wipes that maximize sensitivity and allow larger areas to be sampled [Teshale et al., 2002]); and
- sampling plans take into consideration other locations through which the B. anthracis-containing package or item might have passed and whether sampling is needed in other facilities to make appropriate PEP recommendations for personnel at those sites.

Postexposure Prophylaxis and Follow-Up

Inhaled spores can remain dormant in the lungs or lymphatic system for weeks to months before germination. After germination in alveolar macrophages, vegetative organisms can replicate and cause symptomatic disease. Reported incubation periods have ranged from 1 to 43 days after initial exposure but can be affected by the dose of B. anthracis inhaled and the use of antibiotics. Delayed disease onset is not known to occur with cutaneous or gastrointestinal exposures.

Two methods exist to protect against B. anthracis after the spores have reached the vegetative state. The first is to have adequate levels of antibiotics in the bloodstream to kill vegetative bacteria. The second is to have adequate anti-B. anthracis antibodies in the bloodstream when vegetative bacteria appear. Two U.S. national advisory bodies have considered PEP strategies for preventing inhalational anthrax among persons exposed to aerosolized spores. Both groups, the Advisory Committee on Immunization Practices (ACIP) and the Johns Hopkins Working Group on Civilian Biodefense, concluded that on the basis of available data, the best means for preventing inhalational anthrax is prolonged antibiotic therapy in conjunction with anthrax vaccination ("Use of anthrax vaccine," 2000; Inglesby et al., 1999). The 2002 Institute of Medicine report on anthrax vaccine safety and efficacy also concluded that on the basis of limited animal studies, anthrax vaccine administered in combination with antibiotics after exposure to B. anthracis spores might help prevent development of inhalational anthrax (Institute of Medicine, 2002).

In PEP, antibiotics are initiated as soon as possible after actual or suspected inhalation of B. anthracis spores and anthrax vaccination is started to stimulate production of protective antibodies, so that by the time exposed persons complete their course of antibiotics, they will have sufficient antibodies to protect them against residual spores. Although the effect of delayed PEP or treatment on survival can only be approximated, mathematical models indicate that for each day PEP is delayed after an aerosol exposure, the case-fatality rate can increase by 5 to 10%.

The available anthrax vaccine, BioThrax™ [BioPort Corporation, Lansing, Michigan], is not licensed for PEP, for use as a 3-dose PEP regimen, or for use in children. Therefore, a postexposure regimen of antibiotics and anthrax vaccine can only be administered under an Investigational New Drug (IND) application as part of an emergency-health intervention. If the vaccine is released for use in emergency situations, the Centers for Disease Control and Prevention (CDC) will provide the IND protocol for delivery and use in collaboration with state and local health departments. In conjunction with the 3-dose regimen of vaccine, 60 days of selected oral antibiotics (i.e., ciprofloxacin, doxycycline, or amoxicillin) should be administered to persons potentially exposed to aerosolized B. anthracis spores. The Food and Drug Administration has approved ciprofloxacin and doxycycline for use as PEP against anthrax. When no information is available about the antimicrobial susceptibility of the implicated strain of B. anthracis, initial PEP with ciprofloxacin or doxycycline is recommended for adults and children (CDC, "Update: investigation," 2001; CDC, "Updated recommendations," 2001; CDC, "Update: interim recommendations," 2001). Although fluoroquinolones and tetracyclines are not recommended as first-choice drugs among children because of adverse effects, these concerns might be outweighed by the need for early treatment of pregnant women and children exposed to B. anthracis after a terrorist attack. As soon as the organism's susceptibility to penicillin has been confirmed, prophylactic therapy for children and pregnant women should be changed to oral amoxicillin. B. anthracis is not susceptible to cephalosporins and trimethoprim-sulfamethoxazole; therefore, these agents should not be used for prophylaxis (CDC, "Update: investigation," 2001; CDC, "Updated recommendations," 2001; CDC, "Update: interim recommendations," 2001).

The incubation period to onset of clinical symptoms for inhalational anthrax can be as short as 24 hours. Therefore, after a positive ADS signal, confirmation should be obtained from an LRN laboratory and PEP started as soon as possible, preferably within 15 hours after onset of the collection period that yielded the positive signal.

Pre-event planning should include measures to ensure timely transport and receipt of an LRN laboratory result. The decision to begin PEP should be made on the basis of risk for B. anthracis exposure, including likelihood of aerosol exposure to the powder (Fitch, Raber, & Imbro, 2003), threat assessment in conjunction with law enforcement, validity of preliminary laboratory testing of the suspicious substance, and logistics of initiating an intervention. Epidemiologic and laboratory test data might indicate that certain persons started on PEP were not exposed and that PEP can be discontinued. Persons who potentially have been exposed to B. anthracis should be followed medically for signs and symptoms of disease; in addition, severe adverse events associated with postexposure antibiotics or vaccine should be identified and reported to local health authorities. PEP should proceed as follows:

- Positive LRN PCR assay --- a 3-day course of prophylaxis is initiated.
- Negative LRN culture --- prophylaxis is discontinued.
- Positive LRN culture --- a 60-day course is completed and a 3-dose regimen of anthrax vaccine is initiated in accordance with IND protocols.

Every employer who uses an ADS device is responsible for coordinating in advance PEP distribution procedures through agreements with collaborating partners, including public health authorities. Planning should include arrangements for rapid access to an initial 3-day course of antibiotics to ensure that prophylaxis can begin as soon as possible after B. anthracis exposure has been confirmed by an LRN PCR assay. Antibiotics deployed from the Strategic National Stockpile (SNS) can take 12 hours to deliver after the federal decision to deploy.

Alternatives for securing an initial 3-day course of antibiotics near the PDC site might include maintaining an inventory on-site or making arrangements with local pharmacies, medical centers, or hospitals to maintain sufficient inventories on the employers' behalf. Which of these options is most appropriate will depend on local conditions and capacities (e.g., the number of potentially affected employees, logistics associated with release and recall of employees, and medical resources in the area). When addressing this concern, employers are strongly encouraged to work with their local public health departments to ensure that quantity and dosage requirements are met and that plans for rapid access and delivery are established and practiced through periodic drills.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

A swift and effective response to a positive autonomous detection system (ADS) signal including prompt on-site decontamination of workers and subsequent administration of postexposure prophylaxis to prevent inhalational anthrax

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Use of trade names and commercial sources is for identification only and does not imply endorsement by the United States Department of Health and Human Services.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Meehan PJ, Rosenstein NE, Gillen M, Meyer RF, Kiefer MJ, Deitchman S, Besser RE, Ehrenberg RL, Edwards KM, Martinez KF. Responding to detection of aerosolized Bacillus anthracis by autonomous detection systems in the workplace. MMWR Recomm Rep 2004 Jun 4;53(RR-7):1-12. PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004 Jun 4

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Version
- Portable Document Format (PDF) Version

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

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